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Inside the Mental Mechanism of Evaluation Processing*

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1. Introduction

Evaluation, which is defined as attributing a value to an object, refers to a mental activity that ought to be uncovered by psychological or philosophical investigation—that is, how an evaluation can be constructed inside the mind.[1] This is because it contributes to a wide range of our decision-makings and/or leads to various types of perceptible actions. One may empirically know that these kinds of value judgments are brought about through a number of factors pertaining to individual mentality—cognition, thought, experience, personality, education, society, and environment. One does not understand, however, how such deep mental functions operate to attain the subjective (inconsistent among judges) judgment, because of their complexity and invisibility. We can also see that most evaluations appearing in our minds are expressed as a lexical category of adjective—*good/bad, long/short, new/old* or *fun/boring*. This indicates that research on the semantic structure or meaning-making process of adjectives can open a new window to the resolution of the first-mentioned question—how can evaluations be created in our mind?

In order to realize this, linguistic semantics needs to be a theory that actively deals with such mental phenomena, but it has been silent about these issues, leaving them instead to the realm of psychology or philosophy. In fact, current semantics theories remain grammar-centered, wherein the object of study is to examine different meanings attained by different syntax/constructions.[2] To elucidate such psychological phenomena from the viewpoint of linguistic semantics, a semantic theory that refers to a fundamental mentality and mental mechanism behind our awareness should instead be driven forward, which is tentatively called psychological semantics in this paper.

Section 2 introduces the basic framework of psychological semantics, including its purpose and method, to provide the foundations for the main analysis here.[3] Section 3 proposes the conceptual structure concerning value judgments and suggests the mental mechanism of their processing. Section 4 examines part of evaluation processing with a psychological experiment, and Section 5 concludes this paper.

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2. Towards psychological semantics[4]

Linguistic semantics has long examined the meaning conveyed by linguistic expressions (whether it is a word, phrase, or sentence). Semantics based on such a definition has traditionally dealt with various types of meaning that an utterance involves: logical (objective) meaning, truth-conditional meaning, or contextual meaning like implication.[5] On the other hand, cognitive linguistics (or Cognitive Grammar), while enclosing all these concepts within meaning (or semantic structures), embarks on an explanation of the relation of expressions with speakers (or conceptualizers)—that is, the subjective meaning of expressions. In other words, whereas traditional linguistic theories working on the meaning of language have restricted the object of study only to the 'conscious' content that an expression involves, cognitive linguistics has begun to handle the 'subconscious' part of a speaker's mind; that is, concepts outside the conscious 'stage.' If, however, a semantic theory analyzes the associated meaning from an expression or the semantic content that the hearer[6] is able to infer from an utterance a speaker provides to him/her, it is doubtful that all of these theories can account for the meaning in their senses. This is because they do not draw attention to the meaning that addressees are most interested in and want to catch the best. One actually expects an expression to package information not just in terms of superficial meaning, but a deeper meaning related to the nature of the speaker (whether it is conscious or subconscious) and to convey that to hearers.[7]

In fact, we often try to read a deep thought/belief by any means when we encounter others. In many cases—such as interviews, first meetings, and educational situations—this is more significant than just capturing the superficial meaning that an utterance entails, in order to reach a more substantial understanding. As it may be understood by intuition, we are actually able to infer the background information behind an utterance by accessing a variety of responses such as facial expressions, eye movements, gestures, and even perspiration. However, the most informative medium is the language. In other words, we can identify various characteristics of speakers—their belief, way of thinking, experience, emotion, or sense of humanity—by means of inference from any linguistic information: their choices of words, contents of predicates, manners of conveying expressions, and so on. Exchange of such essential information assumes a significant role in language. As long as the hearer intends to infer such intrinsic information from the language, or the speaker wishes to convey his/her fundamental thought to the hearer (whether it is intentional or unintentional), this topic must be within a sphere of semantic study (and linguistic study) because of its definition above. Thus, a semantic theory should be the one that addresses a deep understanding of others' minds, not just linguistic reference to the external world.[8]

To classify theories of semantics—and, at the same time, sort the types reflecting

how individuals interpret expressions while listening to others—three levels of speech interpretation can be established: (a) 'egocentric,' (b) 'general,' and (c) 'inferential' types of meaning interpretation. This classification is based on which aspect of conversation (or which participant) the hearer places the most focus on among the following participants—'the hearer (him/herself),' 'the communal society,' or 'the speaker'—while s/he listens to a speaker.

First, some people are inclined to put a focus on 'hearers' (i.e., themselves), even when they listen to speech. This indicates that they comprehend speech from their own perspective. This is the 'egocentric' type of meaning interpretation. For example, they utilize their own personal definitions for the word that a speaker expresses during a conversation. Accordingly, misjudgment (or miscommunication) can easily occur in this type of meaning interpretation. Broadly speaking, they conveniently interpret a wide variety of things, events, or people using their own viewpoints in their 'inner worlds.'[9] The importance of this case is shown in how each individual construes objects in their mind, so this is where the semantic part in cognitive linguistics (or Cognitive Grammar) are mainly concerned with.

Second, other people might be apt to regard 'the communal society' as the most important for interpretation.[10] They try to comprehend the speech depending on the common meaning (sense) in their community. This is the 'general' type of meaning interpretation. As people corresponding to this type seek the shared meaning in their societies, they not only avoid reliance on their own perspectives, but they also do not try to access others' inner worlds with their inference. Instead, they refer to the general definition in the society for the word that a speaker uses. General or objective semantics studies have this tendency, as it has not handled the human mind.

Lastly, the remaining case is associated with 'speakers' or their inner minds, as a few people are disposed to be most careful in this regard. During a conversation, they wish to deeply understand the speech—not only the content of it but also the motivation for it. This is the 'inferential' type of meaning interpretation. As the hearer is interested in the inner world of the speaker, they obtain deep comprehension of it through a wide variety of 'inferences.' For instance, they try to understand a word through their inference of how the speaker actually defines that word. Thus, this type could reduce misjudgment (or miscommunication). Because this can be regarded as inference-based semantics, the background theory behind the main analysis in this paper and Relevance theory are concerned with type (c).[11] Finally, note that the description above does aim not to classify semantic theories and individuals into any of the three types but to note that they are different from each other regarding how much they focus on each of the three types.[12]

However, the background theory behind this research, radically different from

Relevance theory, intends to unravel the mechanism of how we attribute individual meaning to experience (i.e., 'Sinngebung' (meaning-giving) in Husserl (1950: §55)). Specifically, the mechanism of evaluation (i.e., attributing a value to an object) is investigated here to elaborate on this (as the title of this paper shows). It might be considered that this research and its theoretical background are not of the (c) inferential type but rather the (a) egocentric type of interpretation, as it seems to explore individual thinking. That is in part true. However, they should be regarded not as the purpose but as the means to an end. To specify this, it is significant to first state that any mental activity of attaching subjective meaning to an experience, including evaluations, can construct the 'inner world' (i.e., mind or thought), as we always construe things only from our own viewpoint (i.e., subjectivity). Accordingly, the comprehension of that kind of mental activity in another's mind is equivalent to understanding every aspect of the inner person—such as their characteristics, personality, and ways of thinking. On this account, the general (common) mechanism of the before-mentioned mental activity should be known to us; otherwise, we would miss a proper guide to the comprehension of another's mental activity. The first step to do so is for researchers to examine the 'individual' mechanism of how we assign personal meaning to experience by referring to our own mental activities (like Husserl's methodological solipsism).[13] Once again, uncovering the mechanism in question is the medium to the purpose of offering a suitable way to enable hearers to deeply understand speakers' minds, instead of a way to understand only the linguistic reference to the external world. Moreover, when research on individual thought is developed to the point of how we can understand each other—in order to make a prosperous society—these achievements could contribute to the 'communal society.' Therefore, optimistically speaking, this purpose might be connected to forming a peaceful 'communal society,' as understanding others is the basis of any kind of society.[14]

With this end in view, there are some significant processes that have been suggested above, which are to be clarified now (Figure 1).[15] First, speech can emerge because one is motivated by underlying conceptions including experience, cognitive abilities, and deep psyche, which will then be perceived by the hearer. These are indicated with the arrows on the right side of Figure 1. Second, the hearer, based on this, can not only understand the meaning of expressions but also conjecture deeper thoughts of the speakers, whether it is conscious or subconscious. This is marked with the arrows in the center part of Figure 1. Lastly, if researchers are required to offer the general (common) mechanism of the mental activity, it is necessary for them to delve into their own minds so as to realize how we are assigning subjective meaning to experience. This is indicated with the arrow on the left within the triangle in Figure 1.

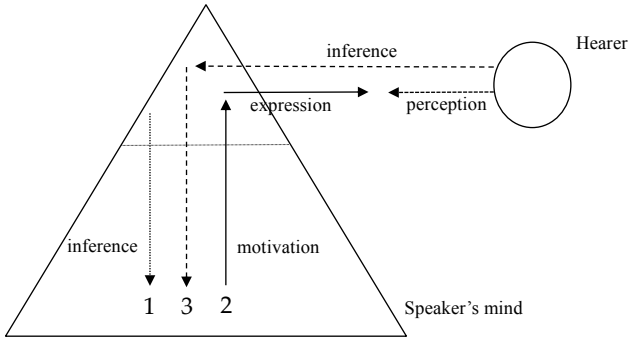


Figure 1: Three analytic processes over the psychological model of consciousness

As evident from the diagram above, it is important for researchers to first try to make their inference (the left arrow) similar to—or rightly, converse of—the process of motivation behind making an expression (the right arrow). Likewise, hearers expect their inference (the middle arrow) to be equal to the motivation for the expression. In consequence, in order to figure out the process as to how hearers can infer the speakers' mentality, researchers need to establish the general (common) mechanism for the mental activities in question, both by referring to their own mental activities (i.e., psychological aspects) and by observing the motivational process of making expressions (i.e., linguistic aspects). The following two paragraphs will account for the processes of the right and left arrow in Figure 1 in more detail.

First, regarding the inference of researchers (the left arrow in Figure 1), many researchers in psychology (or philosophy) have investigated inner thought through their own introspection to make a hypothesis and test it with experiments. However, a field of research that examines psychological factors motivating language has not turned up in that realm, as the researchers in linguistic psychology have not been concerned with them. On the other hand, studies in cognitive linguistics have been interested in subjectivity or subjectification, dealing with some linguistic phenomena such as historical changes in the language (e.g., grammaticalization) or omissions of grammatical subjects observed cross-linguistically (e.g., Langacker 1990; Traugott 1995). They claim that these kinds of phenomena must be explained not by the objectivistic view but by taking into account the relation of conceptualizers to the language. It is problematic, however, that they have avoided discussing the factors causing the subjectivity or explaining subjectivity itself. They also have problems regarding the insufficient demonstration of the basic concepts used for linguistic explanations. Moreover, in either field, it is not easy to find research on the mechanism of how we attribute individual meaning to experience, let alone the mechanism of evaluations.

Second, regarding the right arrows, there are some theories in linguistics that

discuss the motivation for the linguistic expressions being generated (Radden and Panther 2004). They examine a number of motivational factors of a linguistic unit from each viewpoint (e.g., perception, cognition, communication, language history, or biology). Cognitive linguistics, for example, focuses on the conceptual (or semantic) motivation—rather than syntax—and basically assumes that the advent of language is founded on general cognitive abilities such as categorization, projection of viewpoints, metaphor, and image (schema) formation (Yamanashi 2000). This view shows that the expressions, which consist of meaning and form, imply the existence of subjective construals (e.g., Langacker 2008). Although this paper basically follows this idea, the following points remain to be addressed in the semantic theories in linguistics—how individual construals are constructed in one's mind and what kinds of elements can operate during construction in order to accomplish the occurrence of expressions. If our minds (or inner worlds) are assumed as extremely complex, then we should explore what kinds of concepts are their atoms that are combined to achieve the emergence of expressions. The simplest example of this is how we convey common expressions like "it is *long*." We cannot even invent any computer system (or AI) that can produce this expression as properly as human beings can.

Based on these two steps, we can finally address the research question as to how hearers can look inside a speaker's mind or his/her deep thoughts (the center arrows). In short, an analysis of the motivation for language by means of self-introspection (Steps 1 and 2) enables us to reveal how a hearer can predict a deeper mind or belief of the speaker from linguistic expressions (Step 3). Thus, this paper focuses on 'evaluations' from the earliest stage to the end. In the following section, the mental mechanism of evaluations will be examined by uncovering the processes whereby they are constructed from the subjective components of our mind. As this study uses the 'compositional' method of discussion, the explication of composite elements and their interrelations precedes the analysis of the evaluation process, where self-introspection is used to establish a hypothesis.

3. Evaluation process

3.1 Towards an analysis on evaluations

Evaluation, notional process of assigning a particular value onto an object, is one of our mental activities which play important roles in daily life. A portion of its process can be accomplished outside of our intention or even of our consciousness, as actually we cannot explain why or how a judgment is created in our mind. An expression that incorporates a lexical category of adjective may appear as a result of an evaluation process. To realize the substance of its mechanism, instead of semantic theories that deal with the meaning

related to grammar or the word sense, it is necessary to use a framework that is concerned with conceptual structures involving our deep minds, like the one suggested in the last section. An investigation into adjectival expressions would be beneficial to reveal what kinds of elements constitute the mental process and how they work in the mind to give rise to an evaluation. Specifically, what is subjectified in the background or what is hidden behind uses of adjectives is to be explored from the perspectives of both linguistics and psychology. This paper assumes that conceptual structures of evaluations would be analogous to the meaning structure or meaning-making process of adjectives. Based on this, we are able to construct a model of evaluations to describe the conceptual level of such mental activity via the observation of the semantics or mental process of adjectives. This section will explicate what kinds of elements function to make an entire evaluation (Section 3.2), how these elements are interrelated with each other (Section 3.3), and lastly it will offer a dynamic model of evaluation processing (Section 3.4).

However, someone might claim that such judgment would be the result of an intuition, that is, an immediate construal of an external entity, so it is impossible for anyone to be aware of why or how one attaches a particular value onto an object. Then, they would presume that there is no previous thought which affects the judgment, since it is directly connected to the entity one perceives, in which case it is totally meaningless to think of any kind of structure concerning an evaluation. For example, when one looks at a beautiful picture, this picture directly appeals to our intuition so that we cannot help judging it as beautiful. However, Charles S. Peirce is doubtful about the existence of such intuition, and he notes that our mental activity (i.e., thinking) must be influenced by the previous mental activity in the mind, as he stated "finally, no present actual thought (which is a mere feeling) has any meaning, any intellectual value; for this lies not in what is actually thought, but in what *this thought may be connected with in representation by subsequent thoughts*; so that the meaning of a thought is altogether something virtual" (Collected Papers of Charles S. Peirce, 5.289, italics added). The present research agrees with his claim and regards it as a working hypothesis on which the evaluation model will be suggested from now on. In other words, this paper presupposes that our evaluation takes on the systematic aspect to be specified clearly, although it would be processed so fast that one might misjudge that it is a result of our intuition, not of logical thinking.

The most primitive judgments of values are comparisons between just two items from a single perspective, called 'crisp judgment' (Kennedy 2007). For example, we are able to compare the heights of two *tall* buildings in a city to decide which is taller. This type of judgment is most likely to be consistent among those persons who see the same ones. However, this is not the case in a subjective evaluation such as *good, bad, beautiful, happy*, and *funny*—i.e., we are inconsistent in the case of the crisp judgment like which

tower is more beautiful than the other. Obviously, these kinds of evaluations involve complex grounds, on which we regard a thing as beautiful or not. Their grounds are classified into two types: social and innate factors. Among social factors which may affect the decision of, say, '*good*' or '*bad*', are the culture, religion, education, and politics of the judge. Our beliefs or values about judgment are sensitive to the environment in which we have lived from birth. On the other hand, the innate factors which motivate judgments include the degree of comfortability, physiological needs, and safety of our life. All these are said to have more of a 'static' property than a 'dynamic' one, since they tend to be stable or unchangeable within an individual. This paper, however, sets aside these kinds of 'static' aspects of judgments, and will instead draw attention to the dynamic (changeable) factors that may affect judgments considered to be a high-level of processing over the most primitive judgments (i.e., the comparison between two things).

3.2 Working elements in the evaluation structure

As stated above, it is evident that crisp judgments, rating assessments comparing two objects concerning measurements like *hot, cold, long, small, tall*, and *short*, seem to be more consistent among individuals (i.e., objective) compared to the judgment of feelings such as *fun, boring, beautiful, good*, and *bad*. However, the former still can be inconsistent (i.e., subjective) in virtue of the higher-level of construction giving rise to evaluations, in which some subjective elements are involved. Primarily, an evaluation is attained towards the object(s) to be judged (OJ(s)) as in the examples like *boring* 'books', *beautiful* 'flowers', and *tall* 'towers', which are positioned somewhere on the foreground scale (FS) (see Langacker 2008: 332 for the adjective schema). It will be proposed here that there are some elements responsible for subjective judgments—the object(s) to be compared (OC(s)), the norm (N), the standard (St), the background scale (BS), the time flow (T), and the judge(s) (J(s)), as shown in Figure 2. In what follows, each element will be explicated in detail.

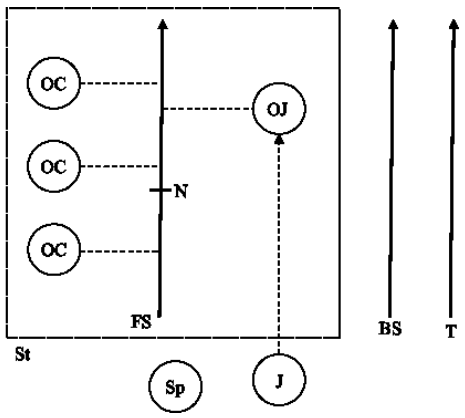


Figure 2: Basic components giving rise to an evaluation

First, object(s) to be compared (OC(s)) is/are essential in making any value judgment, without which we basically could not even attribute a particular value onto an OJ. For example, you could not think "it is *hot* or *cold* here" under the imaginary environmental situation where the temperature was always exactly the same. This indicates that the concept of *hot*/*cold* virtually depends on the existence of OCs, which in turn suggests that the difference in the content of OCs may influence our judgments. As it is evident, dogs are *small* for a mammal, yet they are *big* for a pet. These different judgments seem to come from the comparisons with different types of objects: when taking account of all the mammals like a tiger, a bear, and an elephant, then dogs would be *small*, but if they are compared to other kinds of pets like a cat, bird, and fish, they are considered to be *big*. Note that these types of OCs which are supposed by a Speaker (Sp) rely on the individual's experience. For instance, when some people retrieve many big animals as a pet—e.g., an alligator, a peacock, or a monkey—the dog is considered a *small* pet. In brief, the contents of OCs are subjectively determined in relation to those of the OJ(s), which affect our judgments (the relationship between an OJ and its OC will be discussed in more detail earlier in Section 3.3).

Next, with respect to the judge (J), this is often coincident with the speaker (Sp), but an Sp can also involve many others to make a judgment more general or objective (cf. Yamaoka 1994). For example, considering the judgment "this tennis racket is *light*," the Sp assigns to the OJ the particular value in terms of weight, since s/he regards not babies but many other adults as Js—one can easily realize this because the racket must be very *heavy* for a baby. Further, following this evaluation, a tennis racket manufacturer might think "this racket can sell well," and "the quantity of production must be increased." However, if either an Sp or a J is very young, the judgment on the same racket would be obviously different, as the tennis racket must be *heavy* for them. Briefly, the contents of J(s) supposed by an Sp can affect the nature of an evaluation. Conversely, from the perspective of the hearer, s/he may infer what kind of perspective the Sp takes when the Sp uses such kinds of expressions, and then s/he may finally identify what characteristics the Sp has (e.g., whether the Sp has a viewpoint of the young or not).

Thirdly, both the norm (N), defined as a boundary to decide 'A or ¬A,' and standard (St), a context of OJ invoked for judgment, also take a pivotal role in making a judgment. Regarding N, at first, the position of N is not inherent in each judgment or expression itself but it is determined by individual's characteristics, and therefore it varies among individuals (this will be demonstrated with an experiment in Section 4). Thus, under the situation in which anyone would suppose the same OCs, some people judge that the most OCs are, say, *good, long, or fun*, but others consider only a few OCs to be *good, long, or fun*, simply because of their different Ns. In short, the position of N is subjective or depends

on the individuals. Concerning the St, in turn, this considerably impacts our assessment, since it concerns the ground of why a rating assessment is conducted, whereby one can presume some OCs to make a judgment. For example, when someone thinks "this desk is *long*," this is said to include two types of judgments. One is a relative judgment, being completely compared with OCs, where other desks are conjured up in the speaker's mind to conclude that 'this desk' is *long*. The other type is an absolute judgment, where a J or an Sp considers, say, the balance between the (size of) OJ and the width of his/her room and they think that the desk might not be positioned there [=St] (cf. Leisi 1952). In short, the thinking "this desk is *long*" can involve these different types of judgments, which in effect indicates that St is also subjective and an essential element for any evaluation.

Fourthly, the existence of background scale (BS), a scale which characterizes or defines the foreground scale (FS), also has strong effects on our evaluation. This is because BS is totally different according to the individual or the situation. For instance, the impression "this apple is *good* or *delicious*" might be motivated by other feelings such as *sweet, soft, juicy, mature, red*, etc. Thus, while someone may assign a particular value based on the degree of sweetness, another does it in terms of the softness. In another case, the assessment "this kimchi is *spicy*" might be brought about by its relation to 'the possibility of eating the OJ (kimchi) [=BS]', in a situation where the Sp tried to have the kimchi but he could not [=St]. This can be regarded as an absolute judgment stated above in that it is an evaluation that does not require any OC(s) to relatively judge the OJ. In the end, note that the hearer can realize what kind of BS affecting the FS is supposed by an Sp through inferring from the overt FS, because there are the interrelations between the BS and FS (cf. Section 3.3).

Lastly, the supposed time flow (T), a temporal extent of holding a value, makes a judgment different from one another. In actuality, one can suppose a wide range of Ts —from ad hoc judgments as in "the traffic signal is *red* now" to invariable (universal) assessments like "the Earth is *round*." Moreover, these different types of readings (or motivations) are possible even in the single evaluation "this apple is *good*." On the one hand, some people make an ad hoc judgment implying that the OJ is in good condition to eat, compared with various conditions of the single apple according to the time change [=OCs]. On the other hand, others make an invariable judgment, in which they assume apples which are produced by different farmers [=OCs] to make reference to the 'kind' level of OJ (cf. Carlson 1977). To put it simply, different types of Ts can be supposed in the single evaluation. As a result, this causes the following situation: one may consider an OJ '*bad*' with the short type of T, but, by taking a long T, that judgment might be shifted into '*good*.' In the end, on some occasions, the T can concur with the FS and/or BS. For example, in the case of "this apple is *good*," in which the FS is a *good/bad* rating and BS is

the degree of sweetness, softness, etc., these two—FS and BS—can be parallel to T. The values in the FS and BS are altered according to the T. This—the FS-BS(-T) relationship—will be discussed in detail in the following section.

All of these components of evaluation may be hidden in that they may not get on a conscious 'stage' in our minds, although they can be inferred by an analysis of meaning structure. However, they all have significant functions to motivate our judgments of OJ.

3.3 Interrelations between the working elements

The previous section has shown that many elements function to make a value judgment. All of these elements are assembled in Figure 2 in order to show all the related entities in the same frame. Since they are arranged just as intuitively understood, however, the configuration in that diagram does not denote the specific relationship between these components. Instead, Figure 3, an elaborated model of Figure 2, expresses the way in which each component of evaluation interrelates with other parts, although not all the relations are described (e.g., the 'Sp' must have relations with any component, but only a few relationships are marked here). Following Figure 3, some significant relations will be specifically explained.

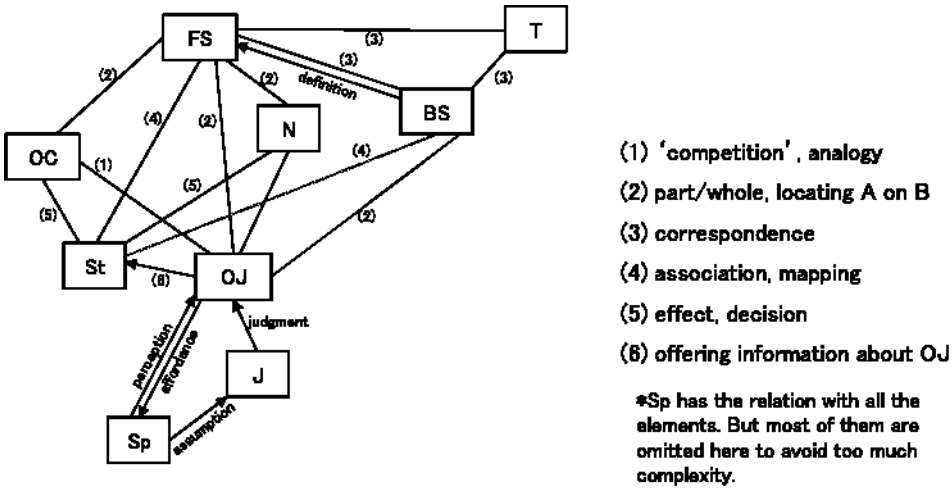


Figure 3: Interrelations between the components making up an evaluation

First of all, an OJ(s) and its OC(s) are in the relation of 'competing with each other' (indicated by the line (1) in the diagram): that is, when an OJ(s) and its OC(s) within an evaluation have different values, an Sp can decide which is more/less among them in terms of the FS (cf. ordering process in Section 3.4). There are two kinds of 'competition' between an OJ and its OC: 'one-on-one' type and 'inclusion' type. Simply put, the former means a bilateral competition, as if an OJ(s) and its OC(s) were some boxers who are

fighting in a ring—that is, a fighting ring metaphor. If an American student came to Kyoto in Japan to study in a college, for example, he might notice "the roads here are *narrow*." Then he would conceive the roads in his home city in the U.S. [=OCs]. He compares these two to make a judgment; that is, the roads in Kyoto [=OJs] vs. the ones in the city he lived in [=OCs]. Moreover, an OJ and its OC mutually influence one another. His knowledge about the roads in the U.S. makes him draw attention to the ones in Japan, while its focus on the roads in Kyoto invokes the ones in his city as OCs. The latter—'inclusion' type—is a group competition. It is as if an OJ ware a racer attending together with many other members [=OCs]—that is, a racing competition metaphor. For instance, when one thinks "elephants are *big*," many other mammals—tigers, deer, dogs—would be assumed as OCs, instead of houses, cars, PCs, pencils, etc. A level of category group including elephants is invoked to compare the size of elephants with one of the others in the same group. In either type, it is obvious that some analogy is employed in his/her mind to find the OC(s) to make a judgment about OJs.

Second, there are kinds of cause-effect relations between an OJ and an St (marked as the arrow (6) in Figure 3); that is, the former offers the information regarding its characterization to the latter. Since that information is generated by the Sp-OJ relation, it is totally reliant upon the way in which the Sp interprets the OJ. For example, in the case of thinking "the battery charger cable is *long*," the following situation may be supposed; the Sp found that the aforementioned cable would reach the outlet distant from the desk s/he was using at that time [=St]. It is this idea that makes the Sp think that the OJ is *long*. In short, the information about an OJ sets down the St for a value judgment. Moreover, this paragraph briefly describes the relation between an Sp and an OJ, since it entirely affects the OJ-St relation. An Sp is able to perceive an OJ with various sensory organs like his/her eyes, ears, and nose to render the OJ a mental representation, and then the Sp also can acquire the information from the mental representation of the OJ, referred to as affordance (cf. Gibson 1979, Honda 2005). For example, when an Sp judged "this house is *large*," the house might afford the feeling of being comfortable or the thought that it can accommodate much furniture of his/hers [=St]. Furthermore, an OJ may afford the force-dynamic relation. For instance, the judgment "that light is very *bright*" contains the influence on the Sp—making him shut his eyes or turn his face away [=St]. That response to the OJ lets him judge "that light is very *bright*."

Thirdly, an St and an FS/BS also have a cause-effect relation between them; in particular, the former associates the latter, marked with the arrow (4) in Figure 3. At the beginning, it is necessary to confirm that the concepts of St and FS are basically different. St is a kind of inferential information temporally connected to the OJ by the Sp, which lays a foundation for any value judgment. On the other hand, FS can contain various levels of

'domain,' (cf. Langacker 1987), such as size, length, quantity, brightness, beauty, and morality, which we originally have in the mind[16] independent of the existence of OJ. In any evaluation, these two different concepts should be tightly connected with each other to make a judgment. For instance, in the case of the judgment of taste "this kiwi fruit juice is *delicious*," a person might dislike the general kiwi fruit juice, but s/he could drink that kiwi fruit juice very well for some reason [=St]—that fact can be associated with the initially given concept of 'palatableness (or deliciousness)' [=FS] to make a judgment of taste. Moreover, an St can be associated with a BS as well. Note that, as indicated in the previous section, the BS associated with the St corresponds to the FS and defines or characterizes the FS. In another example "Aimee is *smart* in the sense that she can work pretty *fast*" shows that both an FS and BS can be expressed simultaneously. Presumably, the Sp witnessed Aimee working so fast that she could decrease the others' work [=St], which is associated with the concept of 'speed,' and this, moreover, corresponds to (is mapped onto) another concept of 'smartness.' As a result, s/he could make such a bit complex judgment about Aimee in terms of intelligence.

Fourthly, there is a cause-effect (or subject-object) relation between an Sp and a J, too; to be more specific, an Sp is able to 'presume' some kinds of J for a value judgment. As it was seen in the last section, a J is relevant to the degree of subjectivity/objectivity. In essence, there are two broad classifications of J; (i) the case of J being totally identical with the Sp, and (ii) the case of different people to be assumed. The former is referred to as 'self-judgment'; i.e., the Sp does not think of whether or not any other persons would take the same judgment, but s/he personally attributes a particular value to an OJ. As a result, that kind of evaluation is considered to be more subjective. This phenomenon may appear spontaneously in our mind with some surprise, or beyond our expectations; i.e. mirativity (cf. DeLancey 1997). Therefore, it tends to be accomplished by thoughtless or fast thinking, rather than thoughtful or slow thinking. Interestingly enough, the Japanese language has a special form for this type of phenomena—'self-judgment.' There are adjective expressions with the end of the word omitted and with the glottal stop added, although this type of usage appears to be a relatively new construction, called 'adjective stem-type sentences' (Shimizu 2015). For example, 'samuʔ' deriving from 'samu-i' (meaning *cold*) is used to denote the feeling of the coldness either individually or immediately.

The latter—the case of different people to be assumed—is further divided into two types: (ii-a) the case of J being partially overlapped with the Sp, and (ii-b) the case of J totally excluding the Sp. Regarding (ii-a), this means the case in which J is a group including the Sp. It also accommodates the case that a group of Js consists of an Sp and a hearer. The Japanese language uses a particle at the end of a sentence in such a way that

the Sp could express this type of Js. For example, the particle 'yo-ne' as in "Sato-san kawaii (meaning '*cute*') yo-ne (meaning "Sato is *cute*, isn't she?"), an intersubjective expression (cf. Traugott 2012), functions as meaning the common Js in a conversation. Accordingly, an Sp can make a value judgment presuming that all of the group members (including the Sp) could make the same judgment. On the other hand, the case (ii-b) is that, whereas some other people are included in the J, the Sp himself is excluded from the J. Consider the case in which the Sp sees a girl looking down from the top of a high building, and s/he thinks "this building is too *high* for her to look down to the ground" —the Sp would estimate her (the third person's) judgment based on some proof which s/he found (e.g., her facial expression while looking down from the high place), so that he could achieve such a thought. Consequently, this type of evaluation seems to be founded on abundant conjecture by the Sp, as well as the case (ii-a). In sum, these last two cases would be concerned with 'the slow thought' and therefore they are referred to as 'the higher levels of value judgment,' compared to the first case, 'self-judgment' (see Section 3.4.2 for sophisticated value judgments).

Last but not least, the relationship of an St with an N is that the former can affect (or determine) the position of N. This will be demonstrated in detail with an experiment in Section 4. Again, N is defined as a position along the FS to decide whether an OJ is the case as a judgment in question (i.e., A or ¬A). As a premise, under the situation of completely relative judgment, the N would always be the same within each individual. In other words, the position of N is assumed to be fixed, although it still has been under discussion whether it is an average of the set of OJs and OCs, or the notably high place on the scale (the result of the experiment in this paper supports the former) (Wierzbicka 1972; Kennedy 2007; Bogusławski 1975). Our claim is, however, that any judgment includes 'absolute judgment' to some extent; that is to say, an St must be come up with by an Sp, and affects (or determines) the position of an N. This means that an St which is inferred from the OJ can change the position of N. For example, once the degree of easiness of writing [=St] is come up with by the Sp, as in the experiment in Section 4, this St has an effect on the basic position of N to the extent that significant difference is statistically found. Briefly, an St has a function to affect the position of N. On the other hand, since this study also presumes that any judgment must include 'relative judgment' to some extent, only the St does not decide the position of N regardless of the basic position of N. For example, even if a battery charger cable is able to reach the outlet from the far desk, we could never think "this battery charger cable is *long*," if, moreover, the cable is the shortest among the battery charger cables that the Sp has ever seen. In conclusion, the N should be determined by the relation of both an St and OCs (or a basic position of N)—that is, the relation of both the absolute standard and the relative comparison. This

will be a key to discuss the evaluation processing in the following section.

3.4 Dynamic processing of evaluations

Finally, this section sets out the process whereby a value judgment is created in our mind, based on the above description of elements involved in evaluations. By reason of being different degrees of 'complexity (or sophistication)' among each case, value judgments are basically explained by being separated into two levels: default processing and sophisticated processing (the latter includes the former). The former is discussed in Section 3.4.1, and the latter in Section 3.4.2.

3.4.1 Default processing

Kobayashi (1998) examines the process of judging something to be *good/bad* in the sense of morality and suggests three steps that every value judgment must take: First, we must acquire a subjective idea associated with the object (i.e., epistemic meaning); Second, we must map the idea onto an emotional domain (i.e., emotional meaning); Lastly, we must judge whether or not the mapped idea really belongs to the emotional domain of *good/bad* (the judgment *good/bad* is thought as the set of emotional meanings). For example, when you think "it is *good* to give precedence to the aged," you would, as a premise, associate the aforesaid behavior with the idea that it should give benefit to others (epistemic meaning), and then you could map this idea onto the emotional domain to acquire the emotional meaning *good*. In the end, you would confirm that the emotional meaning in question is the case.

This analysis appears to be reinterpreted within our framework mentioned earlier. Then, the significant concepts of 'epistemic meaning' and 'emotional meaning' in the above study would mostly correspond to an St and an FS in the present framework, respectively. Moreover, the process can be re-defined as follows, adding the first basic process: [a] We perceive an OJ (to make it a mental representation); [b] We receive some information associated with the OJ (i.e., affordance); [c] Based on the information, we determine an St; And [d] we select an FS (mainly, domain) suitable to the St. When this applies to the earlier example of the perceptual judgment "the battery charger cable is *long*," it includes the process as follows: [a] the perception of the cable, [b] the notice of reaching the outlet from the far desk, [c] the St is fixed as 'whether the cable reaches the outlet', and [d] the (domain in) FS is decided as 'length'. This is the mental process including 'St' and 'FS' in place of epistemic and emotional meanings.

However, this analysis seems to lack some essential processes. Above all, it does not take the effect of the OC(s) into consideration. Sapir (1944) points out that judgments of grading as a psychological process such as "A is *larger/smaller* than B" must precede

decisions of measurement like "A is *large*/*small*." This indicates in essence that relative judgment is necessary for any value judgment. In particular, the activity of retrieving records [=OC(s)] from our memory would affect the processes [b, c], which are mentioned earlier, since the comparison of OC(s) with an OJ makes the information about the OJ (which let us determine an St) come into our mind. Furthermore, this process, which is taken for granted, must be preceded by the perception of an OJ (process [a]), because we have to select the OC(s) which is/are similar to OJ (cf. Section 3.3). As a result, the process of retrieving records [=OCs] from the memory, based on the analogy with OJ, should intervene between process [a] and process [b]. For example, the impression "the cell phone is *thin*" follows the following processes: [i] perceiving the particular cell phone, [ii] recalling other cell phones which the Sp has ever seen, [iii] receiving the information based on the difference between the OCs and the OJ, [iv] regarding an St as the idea that this is easy to be bent, broken, but movable, and [v] defining an FS as the 'thinness'. This is the revised version of evaluation process with an essential part of the process regarding OC(s) added to the previous one.

Moreover, if the component OC(s) is included in the evaluation process, it is also necessary to add the 'ordering' process to this—defined as a mental activity of arranging objects in a line according to (the domain in) the FS (cf. Sapir 1944). Evaluations need to contain such 'ordering,' because we could otherwise not be able to recognize where an OJ should be located along the scale. In reality, it should follow the process [v], since the process of 'ordering' obviously presupposes the existence of FS. In the case of the last example "the cell phone is *thin*," the OJ and the OCs are arranged in order of thinness (process [vi]). In addition, while an ordering process confirms the position of an OJ on the FS, Landmark (Lm), the area above N on the scale,[17] should be defined in association with the position of N, through which we can judge whether or not the OJ is the case (cf. Langacker 1987). But, as discussed in Section 3.3, the N (or Lm) is defined in connection with St, too—that is, the relationship between St and OCs (or the basic position of N). This means that the process of evaluation requires the process involving an St and an N.

For discussing this process, it is necessary to talk about the two types of judgments once again—relative judgments and absolute judgments.[18] As mentioned in Section 3.2, relative judgments are regarded as comparing an OJ with its OC(s), and absolute judgments are defined as judging an OJ by itself without any reference to OC(s). In fact, although value judgments can be divided into these two kinds of judgments as a matter of convenience, any evaluation should arguably contain both kinds of judgments to some extent. In other words, we cannot take either completely relative judgments or absolute judgments. Of course, we can say that a judgment can be more of a relative judgment than an absolute judgment, or vice versa. These indicate that both an OC(s) and an St are

necessary for any value judgment but the degree of their importance varies depending on each value judgment. For instance, when you think "this book is *thick*," you are not just comparing the book with another [=OC], but you also have to associate with the OJ the idea, say, that you must take much time to read it through or you would be tired after moving around with the book [=St]. Moreover, you may misjudge that the judgment "the orange is *sour*" is completely an absolute judgment, in which the Sp would like to convey the idea that he cannot eat it, but the Sp has to recall the other foods with different sourness at the same time. This is because if there are no foods with the different degrees of sourness in the world, even the concept 'sourness' would not exist. In brief, any value judgment crucially involves both types of judgments. Such an idea is regarded here as a working hypothesis to be validated in order to propose the default mechanism of evaluations. In other words, the default process is suggested on the speculation that any value judgment is a mixture of absolute and relative judgments.

At last, based on this hypothesis, the default process of evaluations is established. To do that, it is necessary to think about the decision of Lm in advance to be added to the before-mentioned process. As it is mentioned earlier, Lm is defined as the area above the N on the scale. What should be concerned here is the position of N. Clearly, Ns presuppose the existence of the FS, so the setting of N should follow the decision of FS. However, it is unknown whether arranging the OJ and OC(s) in line on the FS should precede or follow the setting of the N on the FS. Rather, they are supposed to be processed in parallel, in the sense that they do not have any causal relations nor temporal difference of order. As a result, the whole process of evaluations is as follows:

Default process of evaluations (or psychological evaluations)

[1] An OJ is perceived with sensory organs or by retrieving a record from the memory.
[2] The OJ evokes some OC(s) from the memory, based on the analogy between them.
[3] An St is determined, based on the information of the OJ which is obtained in the comparison of the OJ with the OC(s) and/or the direct affordance from the OJ.
[4] An FS is defined by means of the inference from the St.
[5] Ordering: the OJ and the OC(s) are arranged in order in the term of the FS.
[5′] An N is set on the FS, based on the relation between the St and the OCs.
[6] The position of the OJ is confirmed on the FS.
[6′] The area of Lm is confirmed on the FS.
[7] Whether an evaluation of the OJ is true or not is judged (i.e., concluded A or ¬A)

For instance, the impression "the TV screen is *large/big*" in the situation when a male student is taking a seat in the classroom to attend a class in which its professor uses the

OHP and the TV screen, passes through the default process stated above. First, here are the following processes until the decision of the FS: [1] He views the particular TV screen from his seat; [2] He remembers familiar TVs from his experience; [3] He notices that the particular TV is different from them and realizes that he can read the small letters on the TV screen from his position [=St]; And, therefore, [4] an St is determined to be "size" [=FS]. Next, the position of N and Lm should be defined like this: [5] He arranges the aforesaid TV screen and other TV screens in order [=ordering], so [6] the position of the TV screen on the FS is confirmed; At the same time, [5'] an N is set on the FS (of size), based on the St and OCs, so [6'] the area of Lm is confirmed. Finally, [7] he finally judges "the TV screen is *large/big*."

This illustrates how such a simple impression appearing in the mind can be decomposed and logically arranged to be precisely analyzed under the basic hypothesis that it has a rational basis, rather than consisting of a purely unanalyzable intuition (cf. Section 3.1). This kind of phenomena examined here are more psychological rather than of the linguistic field, because our fast mental activities, as if they were caused by intuition, are focused. Thus, evaluations using this default process are also named 'psychological evaluations.' In the following section, more sophisticated phenomena that are required to have linguistic analysis are discussed with special attention to some components—J, OJ, and BS.

3.4.2 Sophisticated processing (or linguistic evaluations)

Evaluations may be classified according to a wide variety of perspectives—for example, a functional (semantic) difference observed among 'moral judgments' such as *good/bad*, 'perceptual judgments' like *long/short,* or 'emotional judgments' including *fun/boring*—but this study draws attention to the level of complexity as a certain standard. This is because the classification in accordance with its standard can be concerned with structural differences of evaluations—supposing that in this paper the functional (or semantic) difference above would not make such differences. In fact, we are able to make value judgments with various levels of complexity according to the degree of thoughtfulness about an OJ. For the sake of simplicity, however, evaluations are divided as a dichotomy between 'pure evaluations' and 'sophisticated evaluations.' This is illustrated as in the following:

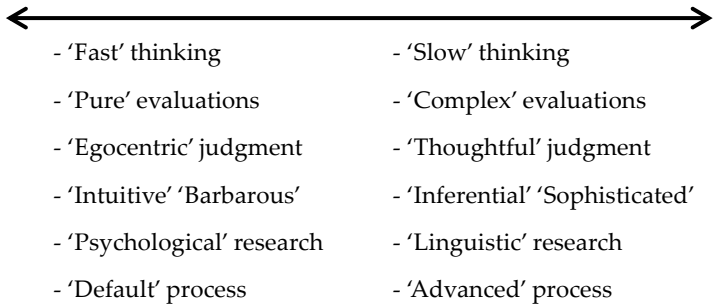


Figure 4: The continuum and classification of evaluations

The former (the left side in Figure 4) is also considered 'psychological evaluations' (i.e., the object of psychology) passing through the default process presented in the previous section, since these types of evaluations have the least complexity, which can appear independently of linguistic expressions. Moreover, they can occur by means of 'fast thinking' rather than 'slow thinking' (Kahneman *et al.* 1982; Kahneman 2011). It would make us feel as if their judgments were made by intuition (i.e., direct construal of an OJ). On the other hand, the latter (the right side in Figure 4) can be referred to as 'linguistic evaluations' (i.e., the object of linguistics), because they seem to be expressed with more complexity that reflects highly-developed human cognitive capacity. In particular, our 'abstraction' or 'projection of viewpoints' is a case in point. To analyze such advanced evaluations, this paper draws attention to some basic components of evaluations—J, OJ, and BS—and specifies such factors causing complexity one by one.

Firstly, our assumption of J(s) makes value judgments developed (other animals, except for human beings, might have difficulty to attain this). Whereas there is no arrangement of any J in the case of basic judgments, in which an Sp uniquely evaluates an OJ from his/her own viewpoint regardless of any others, the Sp is also able to assume other persons [=J(s)]—in the case of sophisticated judgments—to evaluate an OJ in two ways: 'inclusive (or group) judgments' or 'exclusive (or projected) judgments' (see Section 3.3 for the description of the relationship between an Sp and a J). At the beginning, an Sp can assume other persons to take the same judgments as s/he does—that is, inclusive (group) judgments. In fact, when we convey our value judgments to someone, they tend to be group judgments of that kind. For example, when someone says "this bag is *heavy* to walk around with" to their friends, they would not take a self-judgment, but a group (including themselves) judgment to make statements objective. If some intersubjective expressions are added to the sentence, as in "this bag is *heavy* to walk around with, isn't it (/right/you know)?", the nature of it becomes evident. In other words, group judgments might be the default case of value judgments in the linguistic perspective, taking into

account a primary function of language to share information in communication.

On the other hand, an Sp can also assume others to make judgments excluding the Sp him/herself—exclusive (projected) judgments. This is related to our cognitive abilities of projection of viewpoint or inference of other's value judgments, which motivate higher-level evaluations. For example, some statements in which Js appears as a subject or in the *for*-phrase reflect these abilities as in "he is *sad*" or "his room is too *wide* for him to calm down." Interestingly, the Japanese language uses only the latter to express them, so the expression "watashi (I) wa (TOP) *kanasii* (*sad*)" (I'm *sad*) is proper, but the expression "*kare (he) wa (TOP) *kanasii* (*sad*)" (He is *sad*) is regarded as unacceptable/ungrammatical. Although there is a restriction on expressing judgments from another's viewpoint, we can infer (and express) others' value judgments. These are considered advanced evaluations.

On top of that, our abilities of inference and abstraction enable us to evaluate some complex OJs. In basic judgments, an Sp perceives a single object in the external world to regard it as the OJ to be evaluated. However, we often assume that our value judgment is also applicable to any other instances in the same category to make judgments more abstract. Although various degrees of abstraction are possible depending on how many objects an Sp regards as OJs and how many instances an Sp perceives in the category—just three levels of abstraction will be shown here with some examples for the sake of simplicity. The first level involves the lowest level of abstraction, in which a single OJ is perceived by the Sp. For example, the expression "Tom is *tall*" is the case in the situation that the Sp knows him. The next level is the case where multiple OJs are involved and all are perceived by the Sp. For instance, the expression "the starting members of that basketball team are *tall*" in the situation that the Sp knows the heights of all the members, is more complex, since s/he needs to sum up all heights or calculate the average of them in his/her mind. The last one is the case where plural OJs are involved, but just partially perceived by the Sp. S/he is required to expect that any other members possess the same value as the objects which are actually recognized by him/her. The prevalent expression "giraffes are *tall*" is an example of this. Since it is impossible for him/her to see all the giraffes in the world, s/he needs to expect that the same judgment is true for many other instances. This case can be deemed as the intelligent evaluation as a result of our abilities of prediction and abstraction.[19]

In the end, our depth thought can also bring about the existence of BS(s). As is seen in the default evaluations explained earlier in this section, only the FS is required in the case of pure judgments. For example, the expression "the library is *close* from here" does not invoke any other scales than the FS of distance, which indicates that this is the expression involving only a single FS. However, a large amount of expressions actually rely on other scale(s) [=BS(s)] to make sophisticated evaluations. In particular, abstract

expressions like *good/bad* are required to imply at least one BS in order for the Sp to think more specifically. A BS has the function of defining or characterizing the FS (Section 3.3), but different levels of complexity can be established according to the number of BS. The lower level is the case where a single BS defines or characterizes the target FS. The expressions "that pen is *good* (in the sense that it is *easy* to write)" and "the beef is *good* (because of its softness)" are the examples which involve a single BS. On the other hand, the higher level—usual in daily judgments—is the case of multiple BSs, where the Sp has to map their multiple BSs onto a single FS by totalizing the BSs, as in the example "his term paper is *good* (in that it is *stylistic*, *easy* to read, and totally *new*)." The ability of summarizing such complex BSs to constitute a single judgment may be thought of as highly developed one, which allows value judgments to be sophisticated. In other words, those linguistic levels of value judgments are really complex and advanced, in virtue of highly-developed human cognitive operations.

3.5 Summary

This section has so far examined psychological (or mental) aspects of value judgments. I began by explicating the elements responsible for our evaluations—OJ, OC, J, Sp, N, St, FS, BS, and T. Some of them were revealed to be crucially concerned with the subjectivity of evaluations. In addition, it has been pointed out how their elements correlates with each other to create a value judgment. Lastly, the most basic (default) process of the judgment was advocated, which may become more complex through involving some components: J, (complex) OJ, or BS. This kind of higher level of organization over crisp judgments may make a judgment still more subjective (i.e., inconsistent among judges). As a result, by understanding conceptual structure of evaluations—related elements, their interrelations, and the mental process—it becomes easier to predict how and why speakers construct an evaluation.

4. An experimental demonstration of norms and standards[20]

4.1 A norm and standard for judgment

This section empirically examines the nature of norm (N) and standard (St) among the elements making up the evaluation model suggested in Section 3, to understand their characteristics. Once again, N is defined as a boundary on the scale to decide 'A or ¬A' to make a judgment of an object. St is a context of OJ invoked by a speaker to create such judgment, which may affect the position of N (see Section 3.2 for more detail). Mainly, this section investigates the (supposed) default position of N and some important factors in causing the variation in position. Since we need to manipulate any St to properly measure the basic position of N, a computer-aided experiment is conducted on the

participants, with several factors giving rise to subjectivity—in particular St—controlled as much as possible.

4.2 Precedence study

Traditionally, a sentence with a positive gradable adjective such as "John is *tall*" has been interpreted to mean "John is taller than an average man" or "John's height is greater than the average height for human males" (e.g., Rusiecki 1985), indicating that the N should be identified as the average of the objects (i.e., a set of OJ and OCs). Wierzbicka (1972) opposes this and insists that the N should be the median of the objects. Furthermore, other linguists claim that the N must be a noteworthy, attractive value (Bogusławski 1975; Graff 2000; Kennedy 2007). According to them, the N must be positioned on the notably upper part of the scale. Kennedy (2007: 11) provides the linguistic evidence, and notes that the sentence "Nadia's height is greater than the average height of a gymnast, but she is still not tall for a gymnast" is reasonable and acceptable.[21]

As of now, there still is no consensus about the position of N, since, in fact, so many factors seem to keep researchers from answering the questions 'where is a regular position of N on the scale' or 'what has impact on that position.' To answer these questions, we are required to have control over the factors—particularly St—causing some variation in N and to conduct a survey on each factor one by one.

4.3 Experiment

The purpose of the experiment is to investigate a basic position of N and the psychological factors causing its variation. The used 'domain of predication' is physical length, and the corresponding word is a dimensional adjective '*long*' ('naga-i' in Japanese), since it is easy to show a stimulus in that domain of predication in the experiment, and judgments are expected to be consistent in 'ordering' (cf. Section 3.4.1) among participants. In addition, the experiments are conducted with a computer (Macbook Pro 13 inch), which enables us to consistently manage the presence of the stimulus and measure the response time. Moreover, 26 undergraduate or graduate students, who are all Japanese native speakers—20 male and 6 female—are randomly selected as participants from Kyoto University. These participants are asked to give personal information—age, gender, and native language—before they proceed to the main part of the experiment, which consists of five sections—A, B, C, D, and E—which share the same procedure: (i) participants are randomly shown 10 pictures of objects with different lengths for 2 seconds each—in sum, 20 seconds. The minimum length of an object is 4 cm long, and the length of other objects increases by increments of 1.5 cm—the maximum length is 17.5 cm long—and all pictures are 1.35 cm wide. (ii) The pictures are presented at random again, but for each

picture the participants are asked to respond to the question "Can you say that this xxx (name) is *long*?" as quickly as possible with a key [z] (meaning "Yes") or [x] (meaning "No"), but they have no time limit. The color, form, and name of the objects are all different in each section—from A to E—but this does not apply to the name in Section E.

Meanwhile, Sections A and B are the default type, different from each other only in terms of color, form, and name. Section C adds a human image near each object in the default type, and the participants are told that the figure is the same size as the participants themselves. Section D changes the frequency of each picture (pictures of objects 5.5 cm long are presented four times), keeping the average invariable. Lastly, in Section E, the picture of a pencil is presented, which would remind the participants of the objects in the real world.

4.4 Results

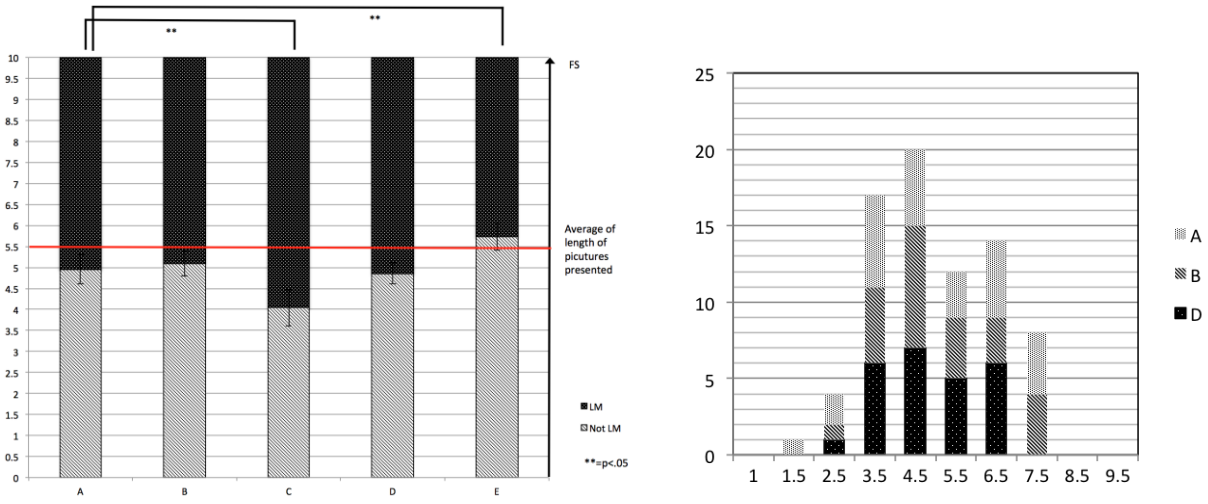
The participants gave consistent answers to the questions. For example, when they answered that the fifth shortest picture (i.e., 10 cm) was 'long,' they added that the longer pictures—from the sixth to the tenth—were also 'long.' In this experiment, the position of N, which participants had in each section, was regarded as the median between the minimum value of the 'positive' answer(s) and the maximum value of the 'negative' answer(s).[22] In case all the responses were positive, the boundary for judgment (i.e., N) was set as the minimum value of pictures (i.e., 4 cm). Moreover, apparent mistakes were corrected, but uncertain ones were regarded as a non-available value (N/A), as were the inconsistent responses. Table 1 shows the basic statistics shown from two perspectives: the order of the N (the left column in each section) and the actual length of pictures (in centimeter unit = cm; the right column in each section).[23]

Table 1: Fundamental statistics

	Experiment A		Experiment B		Experiment C		Experiment D		Experiment E	
n	26		25		24		25		25	
	Position(1-10)	length (cm)	Position(1-10)	length (cm)	Position(1-10)	length (cm)	Position(1-10)	length (cm)	Position(1-10)	length (cm)
SD	1.748845773	2.572326555	1.471960144	2.163330765	2.156469874	3.166598135	1.220655562	1.793989967	1.354006401	2.327797039
u	4.961538462	9.942307692	5.1	10.15	4.041666667	8.5625	4.86	9.79	5.9	11.09615385
m	4.5	9.25	4.5	9.25	3.5	7.75	4.5	9.25	6.5	12.25

Figure 5 (a) indicates the average N in each section, adding the standard error, in which the bold line in the center means the average of the pictures presented to the participants (i.e., 10.75 cm). Sections A, B, C, and D were lower than the average, and only Section E was higher. In addition, in a result of t-test, there were significant differences between Sections A and C ($t = 2.1099$, $df = 23$, $p<.05$) and A and E ($t = -2.3158$, df

= 24, p<.05); therefore, the conditions in Sections C and E were shown to have an effect on the position of N. On the other hand, Figure 5 (b) indicates a histogram of Sections A, B, and D, which are understood as the basic positions of N. According to a parametric t-test, Sections A, B, and D cannot be a random sample that is normally distributed with more than an average of 7 (i.e., 13 cm; p<.01), but may be a random sample that has a normal distribution with an average of 5.5 (i.e., 10.75 cm; p>.01).



(a) Positions of norms (b) Histogram about norms

Figure 5: Results of the experiment

4.5 Discussion

This result is incompatible with the hypothesis that N should be "noteworthy, attractive" values, while it confirms that N should be the average or median of the objects—the set of OJ and OCs. However, there might be other conditions concerned with the position of N being greater than the default N. The most probable idea would be to take the 'communicational situation' into account—in fact, addressees should be confused, if so many things are judged as *long*. Further, we are inclined to figure out the characteristic property that divides an OJ from others. For example, when we think and say "John is *smart*," he is assumed to be, by far, more brilliant than others. Other factors should be similarly investigated to know why the linguistic expression "Nadia's height is greater than the average height of a gymnast, but she is still not tall for a gymnast" is natural to us. However, we can say, at least, that the basic position of N in an evaluation is more the statistical average or median rather than the notably higher value.

Lastly, regarding the factors related to the variation in the default position, the conditions in Sections C and E affected the judgment of each participant, while the change of conditions regarding the name, color, form, and frequency of objects had no significant

influence on them (in Sections A, B, and D). In Section C, when they saw the added human image, several participants compared the presented objects with (the size of) the human image, in addition of comparing their objects with each other. Some participants, however, continued only the latter type of comparison in spite of the change in condition. In Section E, likewise, since they recognized the picture of the pencil, the participants would think of many other pencils to compare with the presented objects. Otherwise, they might consider the usability or ease of handling the presented pencils to change the standard. However, some participants were not affected by this change in the condition. Thus, in Sections C and E, significant individual differences in how much we are affected by the variation in conditions were observed, which might show that there are differences in subjectivity/objectivity among the individuals.

5. Conclusion

One usually evaluates various kinds of entities around them—objects, humans, actions, and events—from different viewpoints in order to determine their behaviors or attitudes toward those entities. It might be unsolved mystery how we actually create evaluations. Someone may think that these kinds of mental activities must be attained in virtue of the putative intuition, so we can never manipulate them by ourselves. This study, however, countered this and proposed that evaluations were not intuitive, but had a compositional and systematic mechanism. Hence, the conceptual mechanism of evaluations—namely, constitutive elements, their interrelations, and the dynamic process—were, as a premise, considered to be analyzable. Actually, they all were examined in Section 3, although we set aside some tasks (e.g., regarding 'static' properties of evaluations noted in Section 3.3, or some special perceptual judgments of color like *red* or *white*).

As a final remark, there are a few significant points in this view that should be noted. First, understanding such systematicity in evaluations enables us to modify any our evaluation to a proper judgment. This may lead to a change in actions or attitudes toward objects. Next, the assertion against intuition is connected to the variety in our value judgments (we often feel), which would be proof of their complexity—against intuition. Lastly, as this paper handled the content in semantic structure or the meaning-making process, an analysis on linguistic structures was proved to be useful in looking inside our mental mechanism.[24]

Notes

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say, any remaining errors are my own.

1. The term 'evaluation' is defined as attributing a value to an object, which may be said using 'value judgment' or 'rating assessment' in this paper. The 'values' which are assigned to objects within this definition include various types of values such as moral (e.g., *good/bad*) (Kobayashi 1998), perceptual (e.g., *long/short*) (Kakizaki 1974), and emotional values (e.g., *fun/boring*). Furthermore, the 'objects' to which some values are attached encompass a wide variety of entities which can be the object of our value judgment—such as things, persons, and events.
2. It is for this background reason that the main argument in my paper is not to explain the grammatical differences of linguistic expressions in the terms of functionalism (i.e., semantics), but to reveal the way in which an evaluation can appear in the mind. Although this study may characterize a portion of semantics of adjectives or grammar concerning adjectives, it would be secondary or merely a by-product of the research. A number of linguists, particularly ones referred to as so-called grammarians, who no doubt think that the job of linguists is to explain the language grammar in a formal or functional way, might feel antipathy against the investigation here, but this paper is an interdisciplinary study among linguistics, psychology, and even philosophy to make a bridge between them and to explain both linguistic and psychological phenomena by finding a continuum from the activity of the mind to language expressions. Actually, the importance of this has sometimes been maintained (e.g., Leech 1974), but it has not been developed. Therefore, it is fruitless for the reader to expect only how the adjective grammar is explained in terms of semantics, as most traditional linguistics theories have conducted.
3. It is necessary to introduce the paradigm to lay the theoretical basis for the main analysis in Section 3, because it is totally different in not only the purpose or the method, but also the definition of 'meaning' from the existing semantics theories.
4. This section aims not to set out a new semantic theory, but to show the theoretical background for the main section, on which the evaluation process will be discussed.
5. For example, several linguistic pragmatics theories, rather than linguistic semantics studies, consider contextual meanings such as connotation and implication to be significant information conveyed to addressees. Furthermore, formal semantics deals with only the concepts that can be described with the prescribed logical expressions.
6. This paper uses the word 'hearer' or 'addressee' instead of the general word 'listener.'
7. The term 'meaning(s)' can be defined in various ways, so one might think that it is equal to 'everything in our mind' or 'every concept within our consciousness' in the broadest sense. This is true because, as we can know the outside world only through our construals, we always attach subjective 'meaning' onto the outside world or our

experience, and all of the results make us construct our inner world.

8. In this paper, the semantics which aims to do that is tentatively named psychological semantics (i.e., psycho-semantics), as the section title shows, because this study deals with the mechanism (or processing) of the mind and conducts some experiments so as to demonstrate a hypothesis. Thus the discussion of evaluations will be based on this.
9. 'Inner world' means our conscious or subconscious minds, which are constructed by a set of subjective meanings which are attributed to experience.
10. The word 'communal society' means the society which a speaker belongs to. One can think of various levels of communal societies (e.g., family, school, city, or state).
11. See Sperber and Wilson (1995) for Relevance Theory.
12. This paragraph deals only with the position of 'hearer,' but this is the case in another position in communication—that is, 'speaker.' In parallel to the case of 'hearer,' there are three possible entities to which speakers can pay attention: 'speakers (themselves)', 'communal society,' or 'hearers.' Generally, it is the best for them to take care of the position of hearer to covey information properly. Moreover, participants in another type of communication (i.e., 'reader' and 'writer') are similar.
13. See Husserl (1950) for more detail. Further, note that a psychologist Sigmund Freud also claims that psychological studies can begin by 'self-introspecting.'
14. This can be one of the destinations in linguistics research. The main analysis here, of course, has the orientation for this end, which could make the analysis different from the research with the purpose just to reveal the mechanism of evaluations.
15. Figure 1 shows our psychological state (i.e., mind) with an equilateral triangle. It is divided into two layers, but the division is arbitrary, as marked with the dotted line. If a concept is located on the upper side, it has these natures: 'conscious,' 'concrete,' 'specific,' 'easier to be expressed,' and 'less-influential.' Conversely, when it is placed on the bottom, it manifests the following properties more: 'sub-conscious,' 'abstract (schematic),' 'structural,' 'hard to be expressed,' and 'influential (on value judgments).'
16. Any domain can be acquired by an infinite number of comparisons in our childhood.
17. The term 'Lm (Landmark)' is defined as the area above the norm on the scale (FS/BS); that is, the area in which a value judgment is true (Langacker 1987).
18. The definitions of the terms 'relative judgments' and 'absolute judgments' are basically different from the usual ones. See Kakizaki (1974) for his definition for their terms.
19. The degree of sophistication or advancement might be measured with adjective stem-type sentences, because this type of sentences are used only if speakers have some experience beyond expectation—that is, mirativity.
20. See Sugaya (to appear) for more detail, which provides more explanations and data than is indicated in this section.

21. If one feel that this is natural, the judgment of *tall* is very restricted, since this sentence indicates that the height of Nadia exceeds the average but she is not regarded as *tall*.
22. The word 'positive answer' means that participants think of the presented picture as *long*, pushing the key [z] (meaning "Yes"). The word 'negative answer' indicates that they did not regard the presented picture as *long*, pushing the key [x] (meaning "No").
23. The position/order (1-10) corresponds to the length (4 cm-17.5 cm) as follows: 1st; 4 cm, 2nd; 5.5 cm, 3rd; 7 cm, 4th; 8.5 cm, 5th; 10 cm, 6th; 11.5 cm, 7th; 13 cm, 8th; 14.5 cm, 9th'; 16 cm, and 10th; 17.5 cm.
24. This can be the methodology in analytic philosophy (e.g., Wittgenstein 1953).

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価値判断の概念構造と心理プロセス

菅谷友亮

本稿は、我々が日常的に行う価値判断（及び評価性、事物に値を付与する心的行為）の仕組みを解明する事を目指す。価値判断は形容詞で表現され易い事に注目し、形容詞の意味並びに意味形成過程の分析を軸に価値判断の心理的な内実を明確化した。価値判断の概念構造と心的過程をモデル化する為、価値判断の構成要素を精緻化し、それらの相互関連を明瞭にした上で基本的な価値判断処理のモデル、更に価値判断を高度化させる要因を提示した。本稿の構成は以下の通りである。2 節では、本研究が基盤とする理論的枠組みを述べた。既存の言語学の理論的枠組みを前提とはせず、包括的な研究プログラムを示す事により、本研究の位置づけを明示した。3 節が本稿の中核であり、価値判断のモデル化を行った。構成要素の精緻化、相互関連、動的処理過程の順で各々明確化した。4 節は、構成要素の一部である基準位置と判断基準に関し心理実験を実施しその結果の考察からそれらの性質を明らかにした。